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November 4, 1996

William S. Caton, Acting Secretary
Federal Communications Commission
1919 M Street, N.W.; Room 222
Washington, D.C. 20554

Re: Notification of *Ex Parte* Contact in ET Docket No. 96-102

Dear Mr. Caton:

Apple Computer, Inc. and the Wireless Information Networks Forum ("WINForum") hereby notify your office of an *ex parte* contact in the above referenced docket. On November 1, 1996, copies of the attached letter were distributed to Dr. Michael Marcus of the Office of Engineering and Technology and to Thomas Tycz, Harry Ng, and Karl Kensinger of the International Bureau.

If you have any questions regarding this notification, please do not hesitate to contact the undersigned at (202) 828-3182.

Respectfully submitted,

Eric W. DeSilva

APPLE COMPUTER, INC.
3 Infinite Loop
Cupertino, California 95014

WINFORUM
1200 19th Street, N.W.
Washington, D.C. 20036

November 1, 1996

Dr. Michael J. Marcus
Office of Engineering and Technology
Federal Communications Commission
Washington, DC 20554

Re: Amendment of the Commission's Rules to Provide for Unlicensed NII/SUPERNet Operations in the 5 GHz Frequency Range
ET Docket 96-102

Dear Dr. Marcus:

We understand that some parties are concerned about potential interference to the Mobile Satellite Service (MSS) feeder uplinks from the proposed NII/SUPERNet devices operating in the 5.15-5.25 GHz band, even at the low power level (-10 dBW or 0.1 watt EIRP) proposed in the NPRM. Moreover, NTIA has expressed reservations about potential interference from higher-EIRP NII/SUPERNet devices to aeronautical radionavigation systems that may use the 5.15-5.25 GHz band in the future.

At the same time, WINForum and Apple have asserted, and continue to believe, that the proposed EIRP limit is unnecessarily low and would preclude adequate functionality, especially in terms of coverage, for wideband devices and systems operating within buildings. WINForum and Apple therefore have requested higher transmitter power output and EIRP for such indoor systems.

In the interest of resolving this conflict in a timely fashion, WINForum and Apple hereby jointly suggest a compromise solution which is based on a proposal recently submitted to the Commission by one of the MSS interests. In an *ex parte* presentation of October 22, 1996, L/Q Licensee, Inc. (LQL) proposed that NII/SUPERNet devices operating in the 5.15-5.25 GHz band be limited to indoor use only, and to a power spectral density of 0.1 Watt per 10 MHz (foil 7 of the presentation). Based on this transmit power spectral density, we propose the following specific provisions for NII/SUPERNet devices operating in the 5.15-5.25 GHz band, which we believe should address the interference concerns mentioned above, and would

provide adequate RF power output for indoor operation of NII/SUPERNet devices:

(1) For devices operated indoors and in the 5.15-5.25 GHz band, a maximum burst-average transmit power 10dBm+10log B or 24 dBm (250 mW), whichever is less, where B is the 20-dB emission bandwidth in MHz.

(2) A provision for outdoor operation in the 5.15-5.25 GHz band with a maximum 60-second average transmit power of 0 dBm+10 log B or 14 dBm (25 mW), whichever is less.

(3) In both cases, reduction of these maximum power limits by the amount by which the antenna gain exceeds 6 dBi (as in 47 CFR 15.247).

To use level (1), a mobile unit would be required to be able to identify and decode a signal from an indoor fixed access point (*i.e.*, a base station). Otherwise, the mobile would be limited to level (2). WINForum and Apple jointly believe that the option to use power level (1) indoors is essential, and that this mechanism for selecting between the indoor and outdoor limit is technically feasible. The Rules would require that the transmission of the "indoor" identifier be restricted to fixed units limited [by rule] to indoor installation.

Apple and WINForum believe that this approach should allay the concerns of the MSS interests and NTIA regarding NII/SUPERNet operations in the 5.15-5.25 GHz band without seriously compromising the functionality of NII/SUPERNet devices. Moreover, it is consistent with the "band plan" proposed by Apple.

We strongly believe that the power limits suggested above should be stated in terms of transmit power; *i.e.*, into the antenna terminals, rather than EIRP. With multiple, randomly-oriented units, antenna directivity tends to average out, and the average EIRP per MHz for a large number of devices would be no greater than the sum of the transmit power levels; *e.g.*, 20 dBm per 10 MHz per actively transmitting device. This is particularly true for operation indoors, where antenna orientation is likely to be randomly-distributed in both the elevation and azimuth dimensions, and the path loss usually more severe than free-space due to reflections, diffraction, and penetration loss.

As a final point, Apple and WINForum oppose the limitation of NII/SUPERNet operations in the 5.15-5.25 GHz band to "noncommercial institutions" as suggested in the LQL *ex parte* (foil 7). Notwithstanding the interpretation questions raised by such a limitation, it could significantly reduce the benefits to the public of NII/SUPERNet devices by limiting potential market sizes and hence the incentive of equipment manufacturers to invest in the development of innovative systems.

Apple and WINForum believe that the approach outlined here is in the public interest, both in terms of addressing the concerns of potential interference to MSS feeder uplinks and aeronautical radionavigation systems, and in terms of allowing adequate power for NII/SUPERNet devices to achieve the necessary coverage in the indoor propagation environment. We therefore encourage the Commission to incorporate this proposal into the Rules for NII/SUPERNet devices.

Please feel free to contact either of us if you have any questions.

Sincerely,

APPLE COMPUTER, INC.

By: Jim F. Lovette /eww

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WIRELESS INFORMATION NETWORKS FORUM

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cc: ET Docket No. 96-102
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Harry Ng, FCC-IB
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